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Medicinal plants and formulations of folk medicinal practitioners of Boda Upazila of Panchagarh district, Bangladesh

Juenan Nashit Lipi, Mahbubur Rahman AHM☼

Plant Taxonomy Laboratory, Department of Botany, Faculty of Life and Earth Sciences, University of Rajshahi, Rajshahi-6205, Bangladesh

☼**Corresponding Author:**
Department of Botany,
Faculty of Life and Earth Sciences,
University of Rajshahi, Rajshahi-6205,
Bangladesh;
E-mail: drrahmanahmm@ru.ac.bd, drrahmanahmm@gmail.com, ahmmahbubur_rahman@yahoo.com
Phone: 880 721 751485, Mobile: 88 01714657224

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ABSTRACT

The present research focused on medicinal uses of plants by the folk medicinal practitioners of Boda upazila of Panchagarh district, Bangladesh from April 2016 to March 2017. The information's about the medicinal uses of personal interviews of rural peoples. A total of 43 plant species under 41 genera and 31 families have been documented which are used for the treatment of 45 categories

diseases. These medicinal plants are used by the rural peoples for the treatment of various diseases like dysentery, skin disease, anemia, jaundice, chicken pox, leprosy, cough, piles, diarrhea, blood pressure, headache, diabetes, asthma, toothache, gonorrhea, fever, ulcer, hair disease, boils, sexual weakness, stomach pain, wounds, scabies, constipation, burning sensation, eczema, snake bite, heart disease and others. The results of the study revealed that the local peoples have rich knowledge of medicinal plants and are using the plants for their primary healthcare.

Keywords: Medicinal Plants, Traditional Uses, Medicinal Practitioner, Panchagarh District, Bangladesh

1. INTRODUCTION

It is thought that about 80% of the 5.2 billion people of the world live in the less developed countries and the World Health Organization (WHO, 1999) estimates that about 80% of these people rely almost exclusively on traditional medicine for their primary healthcare needs. Medicinal plants are the "backbone" of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis. From the dawn of human civilization, plants are playing most important role for the source of medicine. Many studies have shown that over 80% of people in developing countries depend on the traditional medicines for their basic primary health (Bannerman, 1982, Faruque and Uddin, 2014, Shanaj *et al*., 2016).

Plants have always formed an excellent source for modern drugs. Bangladesh is rich in floral species and it has been estimated that more than 5,000 floral species exist within the country, which is small in size. Bangladesh also has a rich history of traditional medicinal practices like Ayurveda, Unani, Folk medicine, and home remedies, all of which utilize plants to a major extent for treatment (Ghani, 2003; Jesmin Nahar and Mahbubur Rahman, 2016). Studies on ethno-medicinal and medico-botanical information in Bangladesh are at initial stage. Several ethno-medicinal studies in Bangladesh have been carried out by Alam (1992), Alam *et al.* (1996), Chakma *et al.* (2003), Shahnaj *et al.* (2016), Choudhury and Rahmatullah (2012), Faruque and Uddin (2014), Khisha (1996), Rahman *et al.* (2012), Jamila and Rahman (2016) and Uddin *et al.* (2001, 2004, 2006, 2008, 2012), Moriom Jamila and Mahbubur Rahman (2016), Amisha Debnath and Mahbubur Rahman, (2017), Mahbubur Rahman and Md. Abdullah Al Mamun (2017). The present research was to first record of medicinal plants used by the medicinal practitioners of Boda Upazila of Panchagarh district, Bangladesh.

2. MATERIALS AND METHODS

Study area: Boda is an upazila of Panchagarh district in the division of Rangpur, Bangladesh. Boda is located at Boda is located at 26.2083°N 88.5597°E. It has 33535 households and total area 349.47 km^2. The climate of this area is generally tropical wet and dry climate, characterized by moderate temperatures, moderate rainfall and humidity. The hot season commences early in March and continues till the middle of July. The maximum temperature observed 34.1 °C and minimum temperature recorded 9.2°C. The highest rainfall is observed during 1787mm. and lowest 1453mm. The humidity range 60.3%-77.0% (BBS, 2011).

Data collection: A total of seventeen field trips were made for the documentation of medico-botanical knowledge during April 2016 to March 2017. During the field interview, the information was noted in the documentation data sheet. A total of 86 informants having an age range 21-80 years were interviewed using semi-structured interviewed method. Professionally they were peasant, day labor, farmer, betel leaf cultivators, house wives, medicine men, small shop keepers etc. Among them 47 were female and rest 39 were male. Regular field studies were made in the study area during the period. The information about the plants used for various diseases was gathered through interviews and discussion with the elderly people, medicine men and traditional medical practitioners were consulted. Plant specimens were collected with flowers and fruits and processed using standard herbarium techniques (Alexiades, 1996).

Plant identification: The identification of plant specimens was achieved through the help of taxonomic experts and by comparison with the identified herbarium specimens and available literatures, i.e. Ahmed *et al.* (2008-2009), Hooker (1875), Prain (1903), Kirtikar and Basu (1987), Huq (1986) and Pasha and Uddin (2013). The voucher specimens are deposited at the Herbarium, Department of Botany, Rajshahi University for future reference.

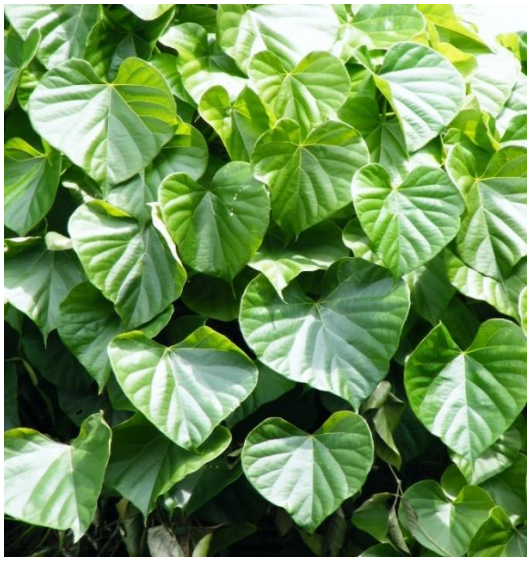
Map of the study area

Natural vegetation of the Study Area





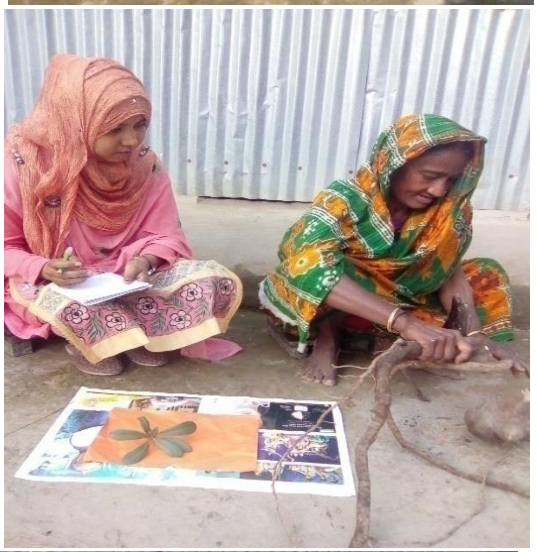






Interview with medicinal practitioners in the study area






Interview with medicinal practitioners in the study area

3. RESULTS AND DISCUSSION

In the present research documented, a total of 43 plant species belonging to 41 genera and 31 families were recorded (Table 1). Out of these plants species, 34.88% belonged to herbs, 25.58% trees, 25.58% shrubs and 13.95% climbers (Figure 1). Use of plant parts as medicine shows variation. Leaves (68.88%) are the leading part used in a majority of medicinal plants followed by 2.32% stems,

16.27% roots, 2.32% bark, 11.62% whole plant, 4.6% seeds, 11.62% fruits, 4.65% bulb, 11.62% flower, 4.65% rhizomes, 2.32% petioles and 2.32% bark (Figure 2). For each species scientific name, local name, family, habit, ailments, treatment process and part(s) used are provided.

The most frequently used species for the treatment of different diseases are *Abroma augusta* (L.) f., *Aegle marmelos* (L.) Corr., *Amaranthus spinosus* L., *Andrographis paniculata* Wall ex Nees., *Allium sativum* L., *Azadirachta indica* A. Juss., *Centella asiatica* (L.) Urban, *Coccinia grandis* (L.) Voigt., *Cynodon dactylon* (L.) Pers., *Eclipta alba* (L.) Hassk., *Ficus racemosa* L., *Lawsonia inermis* L., *Momordica charantia* L., *Mimosa pudica* L., *Psidium guajava* L. *Tamarindus indica* L., *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., and *Zingiber officinale* Roscoe (Table 1). The survey has also recorded 45 categories of uses of 43 medicinal plants. Among the medicinal use of plants, the survey reported a good number of new uses those were not mentioned in the previous literatures (Yusuf *et al.*, 2009; Ghani, 2003; Khan and Huq, 1975; Khan, 1998).

Distribution of medicinal plant species in the families shows variation. Cucurbitaceae is represented by 3 species and Liliaceae is represented by 3 species. Each of Amaranthaceae, Euphorbiceae, Acanthaceae, Comberataceae, Zingiberaceae, Rutsaceae and Fabaceaaeis represented by 2 species while a single species in each was recorded by 21 families (Table 1). The survey indicated that the common medicinal plant families in the study area are Acanthaceae, Amaranthaceae, Apocynaceae, Cucurbitaceae, Euphorbiaceae, Liliaceae, Poaceae, Rutaceae, Solanaceae and Zingiberaceae. This finding of common medicinal plant families in the study is in agreement with Anisuzzaman *et al.* (2007); Aziz *et al.*(2016), Ghani (2003); Khan and Huq (1975), Khan (1998), Kona and Rahman (2016), Jamila and Rahman (2016), Shahnaj *et al.* (2016), Choudhury and Rahmatullah (2012), Faruque and Uddin (2014), Islam and Rahman (2017), Nahar *et al.* (2016), and Yusuf *et al.* (1994, 2006, 2009).

The result of this information showed that these local people of Boda Uazila of Panchagarh still depend on medicinal uses of plants for the treatment of burning sensation, asthma, mouth ulcers, jaundice, chicken pox, cough, skin disease, piles, diarrhea, blood presser, dysentery, dog bite, headache, malaria, paralysis, eye infection, indigestion, diabetes, gonorrhea, fever, cholera, wounds, piles, vomiting and many types of diseases. The information recorded from medicinal healers indicates that the local peoples of the region possess good knowledge of medicinal drugs. The collective efforts of ethno-botanists, phyto-chemists, pharmacologists and pharmacologostical are needed to document and evaluate the efficacy and safety of the claims. To test the scientific validity of the herbal preparation or drugs, clinical studies are required to be conducted. This can establish therapeutic properties of these preparations for safe and longer use. The indigenous knowledge and uses of medicinal plants of a particular area have to be analyzed to develop appropriate management ex situ and in situ conservation measures for best utilization of natural resources.

Table 1 Medicinal plants and formulations by the medicinal practitioners of Boda Upazila of Panchagarh district, Bangladesh

Sl.No.	Botanical name	Local name	Family name	Habit	Parts used	Ailments and formulations
1	*Abroma augusta (*L.) L.f.	Ulotkombol	Sterculiaceae	Shrub	Root	Menstruation: Root bark extracts is used in regulates irregular menses and pain.
2	*Achyranthes aspera* L.	Apang, Dhanshissha	Amaranthaceae	Herb	Leaf	Chicken pox: Leaf paste with resin of *Shorea robusta* and neem applied on the body for one week.
3	*Aegle marmelos* (L.) Corr.	Bel	Rutaceae	Tree	Leaf	Leucorrhea: Leaf paste taken orally for 1 week. Constipation: Juice made from ripe fruits is used as constipation.
4	*Allium cepa* L.	Piaj	Liliaceae	Herb	Bulb	Macerated bulb juice is applied on the affected area for snake bites. Paste prepared from bulb is applied to boils to remove piles.
5	*Allium sativum* L.	Rasun	Liliaceae	Herb	Bulb	Garlic is taken with hot rice to treat high blood pressure.

6	*Amaranthus spinosus* L.	Katashak	Amaranthaceae	Herb	Leaf, Root	Leaves juice is used for dysentery. Leaves paste is given to burning wounds.
7	*Andrographis paniculata* (Burm. f.) Wall. ex Nees.	Kalomegh	Acanthaceae	Herb	Leaf	Malaria: Three spoonful of root and leaf extracts given twice a day for six days.
8	*Alocasia indica* L.	Mankochu	Araceae	Herb	Whole plant	The ash of the root stocks mixed with honey is used in cases of aphthae.
9	*Areca catechu* L.	Supari	Arecaceae	Tree	Stem, Bark	Stem bark decoction is gargled once a daily for two days used as mouth ulcers. Stem bark on the affected areas used as wounds.
10	*Asperagus racemosus* Willd.	Shotmuli	Liliaceace	Climber	Root	Root paste of juice 3 spoon for days used as leucorrhoea and body weakness.
11	*Azadirachta indica* A. Juss.	Neem	Meliaceae	Tree	Leaf	Leaves paste mixed in warm water while bathing used for chicken pox and skin diseases. The leaf juice is taken orally to cure jaundice.
12	*Bryophyllum pinnatum* (Lam.) Oken.	Pathorkuchi	Crassulaceae	Herb	Leaf	Leaf juice is prescribed once daily 5-6 days for blood dysentery.
13	*Cajanus cajan* (L.) Mill.	Arhor	Fabaceae	Shrub	Leaf, Seed	Juice of leaves is laxative; given in jaundice. The seeds are astringent to the bowels.
14	*Calotropis procera* (Ait.) Dryand	Akando	Asclepiadaceae	Shrub	Leaf	Leaf paste heated and applied paralyses part.
15	*Carica papaya* L.	Pepe	Caricaceae	Shrub	Fruit	Fruits pulp with bellam is used for abortion and stomachache.
16	*Catharanthus roseus* (L.) G. Don.	Nayantara	Apocynaceae	Herb	Whole plant	Whole plant is plucked and made juice which helps in leukemia.
17	*Centella asiatica* (L.) Urban	Thankuni	Apiaceae	Herb	Root, Leaf	Spermatorrhea: Root of the plant is taken orally with leaves of *Piper betle* thrice daily, once in the morning before meal, and in the afternoon and night after meals. Skin disease: Leaf decoction is administered externally on affected areas twice a day till cure.
18	*Citrus aurantifolia*	Lebu	Rutaceae	Shrub	Fruit	Fruits juice is taken orally to cure skin

	(Christ.) Swingle.					irrigation and nauseas.
19	*Clerodendrum viscosum* Vent.	Vat	Verbenaceae	Shrub	Leaf, Root	Hair disease: Leaf paste is applied to scalp and kept for 2-3 hours twice per week.
20	*Coccinia grandis* (L.) Voigt.	Telacucha	Cucurbitaceae	Climber	Leaf	Crushed leaves juice mixed with water are used for fever and vomiting.
21	*Curcuma longa* L.	Holud	Zingiberaceae	Herb	Rhizome	Raw turmeric is made paste and taken to cure increases blood volume and diabetes.
22	*Cynodon dactylon* (L.) Pers.	Dubla, Durbaghas	Poaceae	Herb	Whole plant	Macerated fresh juice is used in fresh cuts and wounds to stop bleeding.
23	*Cyperus rotundus* L.	Kella	Cyperaceae	Herb	Root	Macerated root paste is used to cure wounds and sores.
24	*Eclipta alba* (L.) Hassk.	Kalokesha	Asteraceae	Herb	Whole plant	Diarrhea: Leaf juice is fed to the infant by mixing with sugar or honey twice a day for three days. Hair disease: Leaves are made paste and applied on hair for one month for blackening hair.
25	*Euphorbia hirta* L.	Dudha	Euphorbiaceae	Herb	Whole plant	Decoction of stem bark taken orally to cure gout.
26	*Ficus racemosa* L.	Jagdumur	Moraceae	Tree	Fruit	Diabetes: Curry made from young fruits is applied once a day for 30 days.
27	*Heliotropium indicum* L.	Hatishur	Boraginaceae	Herb	Leaf	10 gm macerated leaves juice is used for mad dog bite. 5gm *Ricinus communis* oil are applied on bee sting and poisonous insects bite area.
28	*Hibiscus rosa-sinensis* L.	Joba	Malvaceae	Shrub	Flower	Flowers are made paste and applied topically on the burnt area for about 7 days which helps in reducing burning sensation.
29	*Justicia adhatoda* L.	Bashak	Acanthaceae	Shrub	Leaf	Cough: Leaf juice is taken orally by mixing with salt in empty stomach during morning for three consecutive days.
30	*Lablab purpureus* (L.) Sweet.	Shim	Fabaceae	Climber	Leaf	Leaves paste is used for burning sensation, febrifuge and tonic once daily 2-7 days.
31	*Lagenaria siceraria* (Mol.) Stan.	Lau	Cucurbitaceae	Climber	Fruit	The fruits juice mixed with water used in the morning for piles.

32	*Lawsonia inermis* L.	Mendi	Lythraceae	Shrub	Leaf	Hair loss and skin disease: Leaf paste is topically applied on skin to cure skin disease.
33	*Mangifera indica* L.	Aam	Anacardiaceae	Tree	Gum	Gum paste is used in skin diseases.
34	*Momordica charantia* L.	Korolla	Cucurbitaceae	Climber	Leaf, Fruit, Root	Root paste is used in head pain. The leaves juice is taken orally daily for diabetes. Cooked fruits used as stomachic.
35	*Moringa oleifera* Lam.	Sajna	Moringaceae	Tree	Leaf	Leaves are dried on heat and if taken with rice regularly, help in controlling diabetes. Leaves are made juice and taken twice a day for two days to cure fever.
36	*Ocimum sanctum* L.	Tulshi	Lamiaceae	Shrub	Leaf	Slightly warmed leaf juice is used to treat cold, cough and bronchitis.
37	*Phyllanthus emblica* L.	Amloki	Euphorbiaceae	Tree	Leaf, Fruit	Diabetes and Increase digestion: Green fruits and cumbered dry fruits can be used for treatment of diabetes, it also increases digestion. Scurvy: One green fruit administered twice a day for about 2-3 months. Skin disease: Leaves ground with turmeric and the paste is applied over the skin to cure skin disease.
38	*Piper betle* L.	Pan	Piperaceae	Climber	Leaf	Macerated of 3-4 leaves of *piper betle L.* taken during evening for passing of semen with urine. Grinding decoction of leaves taken orally for cough and heatstroke.
39	*Psidium guajava* L.	Peara	Myrtaceae	Tree	Root	Roots paste mixed with water is for used to treat diarrhea and dysentery once daily for 3-4 days.
40	*Solanum nigrum* L.	Tutbegun	Solanaceae	Herb	Fruit	Fruit juice if taken thrice a day for consecutive three days, helps to reduce fever.
41	*Terminalia arjuna* (Roxb. ex DC) Wight & Arn.	Arjun	Combretaceae	Tree	Bark	Bark is kept wet overnight and taken on the morning once only to normalize low blood pressure.
42	*Tinospora cordifolia* (Willd.) Miers.	Gulancho	Menisperrmaceae	Climber	Stem	Stem are made juice and 15 drops of juice are mixed with 150m gm of sugar or honey twice in the morning and twice in the evening to cure diabetes and Passing of semen.

43	*Zingiber officinale* L.	Ada	Zingiberaceae	Herb	Rhizome	Decoction of dried ginger is used to cure cold, cough and asthma.

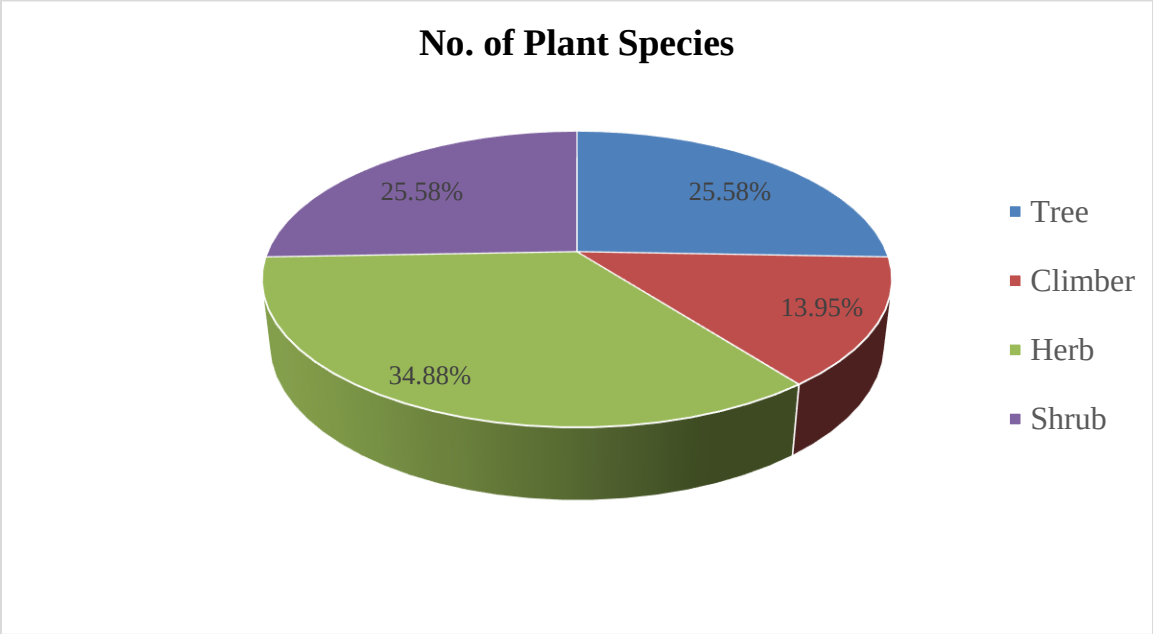


Figure 1 Habit of the recorded plant species in the study area

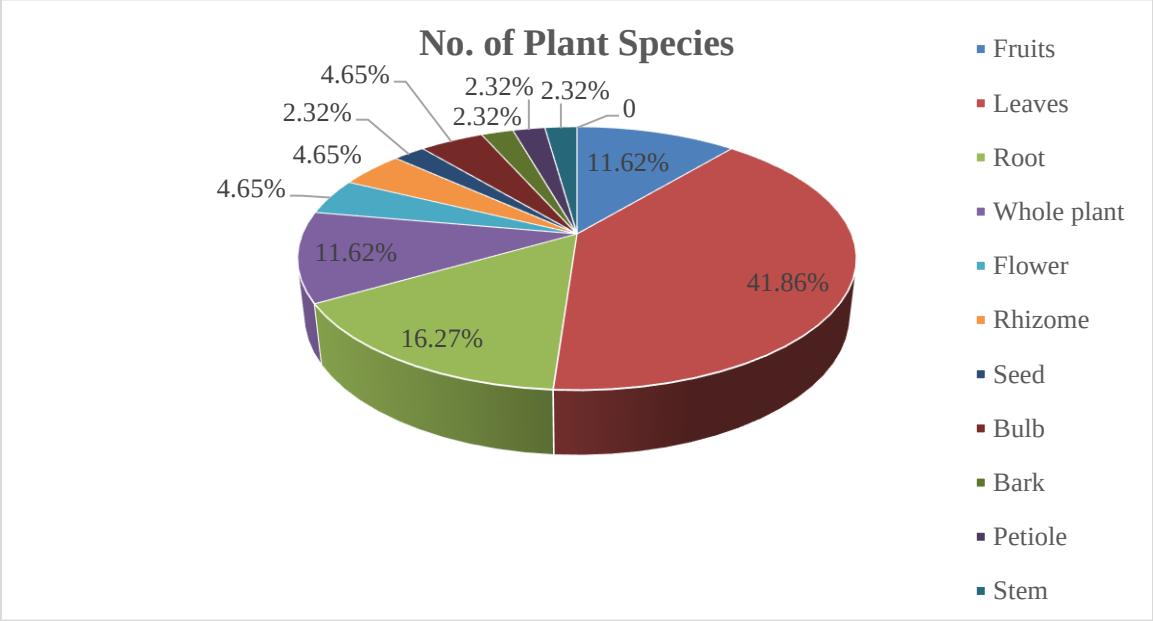


Figure 2 Plant parts used in different diseases

Photograph of medicinal plants


1.*Azadirachta indica*


2.*Calotropis pocera*


3.*Centella asiatica*


4.*Ocimum sanctum*


5. *Adhatoda vasica*


6. *Cynodon dactylon*


7.*Euphorbia hirta*


8.*Lawsonia inermis*


9. *Aegle marmelos*


10.*Clerodendrum viscosum*


11.*Solanum nigrum*


12. *Alocacia indica*


13. *Coccinia grandis*


14. *Carica papaya*


15.*Momordica charantea*


16. *Cyperus rotundus*


17.*Abroma agusta*


18. *Curcuma longa*


19. *Gingiber officinale*


20.*Mangifera indica*


21. *Allium sativum*


22. *Asparagus racemosus*


23. *Ficus racemosa*


24. *Eclipta alba*


25.*Psidium guajava*


26. *Cajanus cajan*


27.*Areca catechu*


28. *Lagenaria vulgaris*


29. *Citrus aurantifolia*


30. *Phyllanthus reticulatus*


31.*Aychyranthus aspera*


32. *Bryophyllum pinnatum*


33. *Andrographis paniculata*


34. *Phyllanthus emblica*


35. *Piper betle*


36.*Heliotropium indicum*


37.*Moringa oleifera*


38. *Hibiscus rosa-sinensis*


39. *Allium cepa*


40. *Terminalia arjuna*


41. *Lablab purpureus*


42. *Amaranthus spinosus*


43. *Tinospora cordifolia*

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